

**WHAT IS CLAIMED IS:**

1. A method for determining the position of a user terminal, comprising:
  - receiving at the user terminal a broadcast television signal from a television signal transmitter;
  - 5 determining a first pseudo-range between the user terminal and the television signal transmitter based on a known component of the broadcast television signal;
  - receiving at the user terminal a mobile telephone signal from a mobile telephone base station;
  - determining a second pseudo-range between the user terminal and the mobile telephone base station based on a known component of the mobile telephone signal; and
  - 10 determining a position of the user terminal based on the first and second pseudo-ranges, a location of the television signal transmitter, and a location of the mobile telephone base station;
  - wherein the mobile telephone signal is selected from the group consisting of
    - 15 a EDGE (Enhanced Data Rates for Global System for Mobile Communications (GSM) Evolution) signal;
    - a Code-Division Multiple Access 2000 (cdma2000) signal; and
    - a Wideband Code-Division Multiple Access (WCDMA) signal.
- 20 2. The method of claim 1, wherein the known component of the mobile telephone signal is selected from the group consisting of:
  - a training sequence;
  - an unmodulated PN sequence;
  - a preselected spreading code in a beacon channel of the mobile telephone signal; and
  - 25 a codeword in a synchronization channel of the mobile telephone signal.
3. The method of claim 1, wherein the broadcast television signal is selected from the group comprising:
  - an American Television Standards Committee (ATSC) digital television signal;

a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal;  
a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and  
an analog television signal.

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4. The method of claim 1, further comprising:
  - receiving at the user terminal a global positioning signal from a global positioning satellite;
  - determining a third pseudo-range between the user terminal and the global positioning satellite based on the global positioning signal; and
  - determining a position of the user terminal based on the first, second and third pseudo-ranges, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.
- 15 5. A method for determining the position of a user terminal, comprising:
  - receiving at the user terminal a broadcast television signal from a television signal transmitter;
  - determining a pseudo-range between the user terminal and the television signal transmitter based on a known component of the broadcast television signal;
  - 20 receiving at the user terminal a EDGE (Enhanced Data Rates for Global System for Mobile Communications (GSM) Evolution) mobile telephone signal from a mobile telephone base station, the mobile telephone signal comprising a timing advance parameter;
  - determining a range between the user terminal and the mobile telephone base station based on the timing advance parameter; and
  - 25 determining a position of the user terminal based on the pseudo-range, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.
- 30 6. The method of claim 5, wherein the broadcast television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;  
a European Telecommunications Standards Institute (ETSI) Digital Video  
Broadcasting - Terrestrial (DVB-T) signal;  
a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and  
5 an analog television signal.

7. The method of claim 5, further comprising:  
determining a second pseudo-range between the user terminal and the mobile  
telephone base station based on a known component of the mobile telephone signal; and  
10 determining a position of the user terminal based on the first and second pseudo-  
ranges, the range, a location of the television signal transmitter, and a location of the mobile  
telephone base station.

8. The method of claim 7, further comprising:  
15 receiving at the user terminal a global positioning signal from a global positioning  
satellite;  
determining a third pseudo-range between the user terminal and the global  
positioning satellite based on the global positioning signal; and  
determining a position of the user terminal based on the first, second and third  
20 pseudo-ranges, the range, a location of the television signal transmitter, a location of the  
mobile telephone base station, and a location of the global positioning satellite.

9. The method of claim 5, further comprising:  
receiving at the user terminal a global positioning signal from a global positioning  
25 satellite;  
determining a second pseudo-range between the user terminal and the global  
positioning satellite based on the global positioning signal; and  
determining a position of the user terminal based on the first and second pseudo-  
ranges, the range, a location of the television signal transmitter, a location of the mobile  
30 telephone base station, and a location of the global positioning satellite.

10. A method for determining the position of a user terminal, comprising:  
receiving at the user terminal a broadcast television signal from a television signal  
5 transmitter;  
determining a first pseudo-range between the user terminal and the television signal  
transmitter based on a known component of the broadcast television signal;  
receiving at the user terminal a mobile telephone signal from a mobile telephone base  
station;  
10 determining a second pseudo-range between the user terminal and the mobile  
telephone base station based on a known component of the mobile telephone signal; and  
transmitting the first and second pseudoranges to a location server configured to  
determine a position of the user terminal based on the first and second pseudo-ranges, a  
location of the television signal transmitter, and a location of the mobile telephone base  
15 station;  
wherein the mobile telephone signal is selected from the group consisting of  
a EDGE (Enhanced Data Rates for Global System for Mobile  
Communications (GSM) Evolution) signal;  
a Code-Division Multiple Access 2000 (cdma2000) signal; and  
20 a Wideband Code-Division Multiple Access (WCDMA) signal.

11. The method of claim 10, wherein the known component of the mobile  
telephone signal is selected from the group consisting of:  
a training sequence;  
25 an unmodulated PN sequence;  
a preselected spreading code in a beacon channel of the mobile telephone signal; and  
a codeword in a synchronization channel of the mobile telephone signal.

12. The method of claim 10, wherein the broadcast television signal is selected  
30 from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;  
a European Telecommunications Standards Institute (ETSI) Digital Video  
Broadcasting - Terrestrial (DVB-T) signal;  
a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and  
5 an analog television signal.

13. The method of claim 10, further comprising:  
receiving at the user terminal a global positioning signal from a global positioning  
satellite;

10 determining a third pseudo-range between the user terminal and the global  
positioning satellite based on the global positioning signal; and  
transmitting the first, second and third pseudoranges to a location server configured to  
determine a position of the user terminal based on the first, second and third pseudo-ranges, a  
location of the television signal transmitter, a location of the mobile telephone base station,  
15 and a location of the global positioning satellite.

14. A method for determining the position of a user terminal, comprising:  
receiving at the user terminal a broadcast television signal from a television signal  
transmitter;

20 determining a pseudo-range between the user terminal and the television signal  
transmitter based on a known component of the broadcast television signal;  
receiving at the user terminal a EDGE (Enhanced Data Rates for Global System for  
Mobile Communications (GSM) Evolution) mobile telephone signal from a mobile telephone  
base station, the mobile telephone signal comprising a timing advance parameter;

25 determining a range between the user terminal and the mobile telephone base station  
based on the timing advance parameter; and  
transmitting the pseudorange and the range to a location server configured to  
determine a position of the user terminal based on the pseudorange, the range, a location of  
the television signal transmitter, and a location of the mobile telephone base station.

15. The method of claim 14, wherein the broadcast television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;

a European Telecommunications Standards Institute (ETSI) Digital Video

5 Broadcasting - Terrestrial (DVB-T) signal;

a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and

an analog television signal.

16. The method of claim 14, further comprising:

10 determining a second pseudo-range between the user terminal and the mobile telephone base station based on a known component of the mobile telephone signal; and

transmitting the first and second pseudo-ranges and the range to a location server configured to determine a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, and a location of the mobile 15 telephone base station.

17. The method of claim 16, further comprising:

receiving at the user terminal a global positioning signal from a global positioning satellite;

20 determining a third pseudo-range between the user terminal and the global positioning satellite based on the global positioning signal; and

transmitting the first, second and third pseudo-ranges and the range to a location server configured to determine a position of the user terminal based on the first, second and third pseudo-ranges, the range, a location of the television signal transmitter, a location of the 25 mobile telephone base station, and a location of the global positioning satellite.

18. The method of claim 14, further comprising:

receiving at the user terminal a global positioning signal from a global positioning satellite;

determining a second pseudo-range between the user terminal and the global positioning satellite based on the global positioning signal; and

transmitting the first and second pseudo-ranges and the range to a location server configured to determine a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

5 19. A method for determining the position of a user terminal, comprising:

receiving a first pseudo-range from the user terminal, the first pseudo-range determined between the user terminal and a television signal transmitter based on a known component of a broadcast television signal transmitted by the television signal transmitter;

10 receiving a second pseudo-range from the user terminal, the second pseudo-range determined between the user terminal and a mobile telephone base station based on a known component of a mobile telephone signal transmitted by the mobile telephone base station;

15 and

determining a position of the user terminal based on the first and second pseudo-ranges, a location of the television signal transmitter, and a location of the mobile telephone base station;

20 wherein the mobile telephone signal is selected from the group consisting of

a EDGE (Enhanced Data Rates for Global System for Mobile Communications (GSM) Evolution) signal;

a Code-Division Multiple Access 2000 (cdma2000) signal; and

a Wideband Code-Division Multiple Access (WCDMA) signal.

25 20. The method of claim 19, wherein the known component of the mobile telephone signal is selected from the group consisting of:

a training sequence;

an unmodulated PN sequence;

a preselected spreading code in a beacon channel of the mobile telephone signal; and

30 a codeword in a synchronization channel of the mobile telephone signal.

21. The method of claim 19, wherein the broadcast television signal is selected from the group comprising:

5 an American Television Standards Committee (ATSC) digital television signal; a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal; a Japanese Integrated Services Digital Broadcasting- Terrestrial (ISDB-T) signal; and an analog television signal.

10 22. The method of claim 19, further comprising:

receiving a third pseudo-range between the user terminal and a global positioning satellite based on a global positioning signal transmitted by the global positioning satellite; and

15 determining a position of the user terminal based on the first, second and third pseudo-ranges, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

20 23. A method for determining the position of a user terminal, comprising:

receiving a pseudo-range between the user terminal and a television signal transmitter, the pseudo-range determined based on a known component of a broadcast television signal transmitted by the television signal transmitter;

25 receiving a range between the user terminal and a mobile telephone base station, the range determined based on a timing advance parameter in a EDGE (Enhanced Data Rates for Global System for Mobile Communications (GSM) Evolution) mobile telephone signal transmitted by the mobile telephone base station; and

determining a position of the user terminal based on the pseudorange, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

24. The method of claim 23, wherein the broadcast television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;

a European Telecommunications Standards Institute (ETSI) Digital Video

5 Broadcasting - Terrestrial (DVB-T) signal;

a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and

an analog television signal.

25. The method of claim 23, further comprising:

10 receiving a second pseudo-range between the user terminal and the mobile telephone base station, the second pseudo-range determined based on a known component of the mobile telephone signal; and

15 determining a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

26. The method of claim 25, further comprising:

receiving a third pseudo-range between the user terminal and the global positioning satellite, the third pseudo-range determined based on a global positioning signal transmitted by the global positioning satellite; and

determining a position of the user terminal based on the first, second and third pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

25 27. The method of claim 23, further comprising:

receiving a second pseudo-range between the user terminal and a global positioning satellite, the second pseudo-range determined based on a global positioning signal transmitted by the global positioning satellite; and

determining a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

5        28. Computer-readable media embodying instructions executable by a computer to perform a method for determining the position of a user terminal, the method comprising:

      determining a first pseudo-range between the user terminal and a broadcast television signal transmitter based on a known component of a broadcast television signal received at the user terminal from the television signal transmitter;

10        determining a second pseudo-range between the user terminal and a mobile telephone base station based on a known component of a mobile telephone signal received at the user terminal from the mobile telephone base station; and

      determining a position of the user terminal based on the first and second pseudo-ranges, a location of the television signal transmitter, and a location of the mobile telephone base station;

15        wherein the mobile telephone signal is selected from the group consisting of  
              a EDGE (Enhanced Data Rates for Global System for Mobile  
              Communications (GSM) Evolution) signal;

      a Code-Division Multiple Access 2000 (cdma2000) signal; and

20        a Wideband Code-Division Multiple Access (WCDMA) signal.

29. The media of claim 28, wherein the known component of the mobile telephone signal is selected from the group consisting of:

      a training sequence;

25        an unmodulated PN sequence;

      a preselected spreading code in a beacon channel of the mobile telephone signal; and  
      a codeword in a synchronization channel of the mobile telephone signal.

30. The media of claim 28, wherein the broadcast television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;  
a European Telecommunications Standards Institute (ETSI) Digital Video  
Broadcasting - Terrestrial (DVB-T) signal;  
a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and  
5 an analog television signal.

31. The media of claim 28, wherein the method further comprises:  
determining a third pseudo-range between the user terminal and a global positioning  
satellite based on a global positioning signal received at the user terminal from the global  
positioning satellite; and  
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determining a position of the user terminal based on the first, second and third  
pseudo-ranges, a location of the television signal transmitter, a location of the mobile  
telephone base station, and a location of the global positioning satellite.

15 32. Computer-readable media embodying instructions executable by a computer  
to perform a method for determining the position of a user terminal, the method comprising:  
determining a pseudo-range between the user terminal and a television signal  
transmitter based on a known component of a broadcast television signal received at the user  
terminal from the television signal transmitter;

20 receiving at the user terminal a EDGE (Enhanced Data Rates for Global System for  
Mobile Communications (GSM) Evolution) mobile telephone signal from a mobile telephone  
base station, the mobile telephone signal comprising a timing advance parameter;

determining a range between the user terminal and the mobile telephone base station  
based on the timing advance parameter; and

25 determining a position of the user terminal based on the pseudo-range, the range, a  
location of the television signal transmitter, and a location of the mobile telephone base  
station.

30 33. The media of claim 32, wherein the broadcast television signal is selected  
from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;  
a European Telecommunications Standards Institute (ETSI) Digital Video  
Broadcasting - Terrestrial (DVB-T) signal;  
a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and  
5 an analog television signal.

34. The media of claim 32, wherein the method further comprises:  
determining a second pseudo-range between the user terminal and the mobile  
telephone base station based on a known component of the mobile telephone signal; and  
10 determining a position of the user terminal based on the first and second pseudo-  
ranges, the range, a location of the television signal transmitter, and a location of the mobile  
telephone base station.

35. The media of claim 34, wherein the method further comprises:  
15 determining a third pseudo-range between the user terminal and a global positioning  
satellite based on a global positioning signal received at the user terminal from the global  
positioning satellite; and  
determining a position of the user terminal based on the first, second and third  
pseudo-ranges, the range, a location of the television signal transmitter, a location of the  
20 mobile telephone base station, and a location of the global positioning satellite.

36. The media of claim 32, wherein the method further comprises:  
determining a second pseudo-range between the user terminal and a global  
positioning satellite based on a global positioning signal received at the user terminal from  
25 the global positioning satellite; and  
determining a position of the user terminal based on the first and second pseudo-  
ranges, the range, a location of the television signal transmitter, a location of the mobile  
telephone base station, and a location of the global positioning satellite.

37. Computer-readable media embodying instructions executable by a computer to perform a method for determining the position of a user terminal, the method comprising:

5 determining a first pseudo-range between the user terminal and a television signal transmitter based on a known component of a broadcast television signal received at the user terminal from the television signal transmitter;

determining a second pseudo-range between the user terminal and a mobile telephone base station based on a known component of a mobile telephone signal received at the user terminal from the mobile telephone base station; and

10 causing the user terminal to transmit the first and second pseudoranges to a location server configured to determine a position of the user terminal based on the first and second pseudo-ranges, a location of the television signal transmitter, and a location of the mobile telephone base station;

wherein the mobile telephone signal is selected from the group consisting of

15 a EDGE (Enhanced Data Rates for Global System for Mobile

Communications (GSM) Evolution) signal;

a Code-Division Multiple Access 2000 (cdma2000) signal; and

a Wideband Code-Division Multiple Access (WCDMA) signal.

38. The media of claim 37, wherein the known component of the mobile telephone signal is selected from the group consisting of:

20 a training sequence;

an unmodulated PN sequence;

a preselected spreading code in a beacon channel of the mobile telephone signal; and a codeword in a synchronization channel of the mobile telephone signal.

25 39. The media of claim 37, wherein the broadcast television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;

30 a European Telecommunications Standards Institute (ETSI) Digital Video

Broadcasting - Terrestrial (DVB-T) signal;

a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and an analog television signal.

40. The media of claim 37, wherein the method further comprises:

5 determining a third pseudo-range between the user terminal and a global positioning satellite based on a global positioning signal received at the user terminal from the global positioning satellite; and

10 causing the user terminal to transmit the first, second and third pseudoranges to a location server configured to determine a position of the user terminal based on the first, second and third pseudo-ranges, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

41. Computer-readable media embodying instructions executable by a computer to perform a method for determining the position of a user terminal, the method comprising:

15 determining a pseudo-range between the user terminal and a television signal transmitter based on a known component of a broadcast television signal received at the user terminal from the television signal transmitter;

20 determining a range between the user terminal and a mobile telephone base station based on a timing advance parameter in a EDGE (Enhanced Data Rates for Global System for Mobile Communications (GSM) Evolution) mobile telephone signal received at the user terminal from the mobile telephone base station; and

25 causing the user terminal to transmit the pseudorange and the range to a location server configured to determine a position of the user terminal based on the pseudorange, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

42. The media of claim 41, wherein the broadcast television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;

a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal;  
a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and  
an analog television signal.

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43. The media of claim 41, wherein the method further comprises:  
determining a second pseudo-range between the user terminal and the mobile telephone base station based on a known component of the mobile telephone signal; and  
causing the user terminal to transmit the first and second pseudo-ranges and the range to a location server configured to determine a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

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44. The media of claim 43, wherein the method further comprises:  
determining a third pseudo-range between the user terminal and a global positioning satellite based on a global positioning signal received at the user terminal from the global positioning satellite; and  
causing the user terminal to transmit the first, second and third pseudo-ranges and the range to a location server configured to determine a position of the user terminal based on the first, second and third pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

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45. The media of claim 41, wherein the method further comprises:  
determining a second pseudo-range between the user terminal and a global positioning satellite based on a global positioning signal received at the user terminal from the global positioning satellite; and  
causing the user terminal to transmit the first and second pseudo-ranges and the range to a location server configured to determine a position of the user terminal based on the first

and second pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

46. Computer-readable media embodying instructions executable by a computer  
5 to perform a method for determining the position of a user terminal, the method comprising:

determining a position of the user terminal based on

a first pseudo-range determined between the user terminal and a television signal transmitter based on a known component of a broadcast television signal transmitted by the television signal transmitter,

10 a second pseudo-range determined between the user terminal and a mobile telephone base station based on a known component of a mobile telephone signal transmitted by the mobile telephone base station,

a location of the television signal transmitter, and

a location of the mobile telephone base station;

15 wherein the mobile telephone signal is selected from the group consisting of

a EDGE (Enhanced Data Rates for Global System for Mobile

Communications (GSM) Evolution) signal;

a Code-Division Multiple Access 2000 (cdma2000) signal; and

a Wideband Code-Division Multiple Access (WCDMA) signal.

20 47. The media of claim 46, wherein the known component of the mobile telephone signal is selected from the group consisting of:

a training sequence;

an unmodulated PN sequence;

25 a preselected spreading code in a beacon channel of the mobile telephone signal; and a codeword in a synchronization channel of the mobile telephone signal.

48. The media of claim 46, wherein the broadcast television signal is selected from the group comprising:

30 an American Television Standards Committee (ATSC) digital television signal;

a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal;  
a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and an analog television signal.

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49. The media of claim 46, wherein the method further comprises:  
determining a position of the user terminal based on  
the first and second pseudo-ranges,  
a third pseudo-range determined between the user terminal and a global  
10 positioning satellite based on a global positioning signal transmitted by the global  
positioning satellite,  
a location of the television signal transmitter,  
a location of the mobile telephone base station, and  
a location of the global positioning satellite.

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50. Computer-readable media embodying instructions executable by a computer to perform a method for determining the position of a user terminal, the method comprising:  
determining a position of the user terminal based on  
a pseudo-range determined between the user terminal and a television signal  
transmitter based on a known component of a broadcast television signal transmitted  
20 by the television signal transmitter,  
a range determined between the user terminal and a mobile telephone base  
station based on a timing advance parameter in a EDGE (Enhanced Data Rates for  
Global System for Mobile Communications (GSM) Evolution) mobile telephone  
25 signal transmitted by the mobile telephone base station,  
the pseudorange,  
the range,  
a location of the television signal transmitter, and  
a location of the mobile telephone base station.

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51. The media of claim 50, wherein the broadcast television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;

a European Telecommunications Standards Institute (ETSI) Digital Video

5 Broadcasting - Terrestrial (DVB-T) signal;

a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and an analog television signal.

52. The media of claim 50, wherein the method further comprises:

10 determining a position of the user terminal based on

the first pseudo-range,

a second pseudo-range determined between the user terminal and a mobile telephone base station based on a known component of a mobile telephone signal received at the user terminal from the mobile telephone base station,

15 a location of the television signal transmitter, and

a location of the mobile telephone base station.

53. The media of claim 52, wherein the method further comprises:

determining a position of the user terminal based on

20 the first and second pseudo-ranges,

a third pseudo-range determined between the user terminal and a global

positioning satellite based on a global positioning signal transmitted by the global positioning satellite,

a location of the television signal transmitter,

25 a location of the mobile telephone base station, and

a location of the global positioning satellite.

54. The media of claim 50, wherein the method further comprises:

determining a position of the user terminal based on

30 the first second pseudo-range,

a second pseudo-range determined between the user terminal and a global positioning satellite based on a global positioning signal transmitted by the global positioning satellite,

5 a location of the television signal transmitter,

a location of the mobile telephone base station, and

a location of the global positioning satellite.

55. An apparatus for determining the position of a user terminal, comprising:

a receiver to receive at the user terminal a broadcast television signal from a

10 television signal transmitter;

a processor to determine a first pseudo-range between the user terminal and the

television signal transmitter based on a known component of the broadcast television signal;

wherein the receiver receives at the user terminal a mobile telephone signal from a mobile telephone base station;

15 wherein the processor determines a second pseudo-range between the user terminal and the mobile telephone base station based on a known component of the mobile telephone signal; and

wherein the processor determines a position of the user terminal based on the first and second pseudo-ranges, a location of the television signal transmitter, and a location of the 20 mobile telephone base station;

wherein the mobile telephone signal is selected from the group consisting of

a EDGE (Enhanced Data Rates for Global System for Mobile

Communications (GSM) Evolution) signal;

a Code-Division Multiple Access 2000 (cdma2000) signal; and

25 a Wideband Code-Division Multiple Access (WCDMA) signal.

56. The apparatus of claim 55, wherein the known component of the mobile telephone signal is selected from the group consisting of:

a training sequence;

30 an unmodulated PN sequence;

a preselected spreading code in a beacon channel of the mobile telephone signal; and a codeword in a synchronization channel of the mobile telephone signal.

57. The apparatus of claim 55, wherein the broadcast television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;  
a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal;  
a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and  
an analog television signal.

58. The apparatus of claim 55, wherein:

the receiver receives at the user terminal a global positioning signal from a global positioning satellite;

15 the processor determines a third pseudo-range between the user terminal and the global positioning satellite based on the global positioning signal; and

the processor determines a position of the user terminal based on the first, second and third pseudo-ranges, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

20 59. An apparatus for determining the position of a user terminal, comprising:

a receiver to receive at the user terminal a broadcast television signal from a television signal transmitter;

25 a processor to determine a pseudo-range between the user terminal and the television signal transmitter based on a known component of the broadcast television signal;

wherein the receiver receives at the user terminal a EDGE (Enhanced Data Rates for Global System for Mobile Communications (GSM) Evolution) mobile telephone signal from a mobile telephone base station, the mobile telephone signal comprising a timing advance parameter;

wherein the processor determines a range between the user terminal and the mobile telephone base station based on the timing advance parameter; and

wherein the processor determines a position of the user terminal based on the pseudo-range, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

60. The apparatus of claim 59, wherein the broadcast television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;  
10 a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal;  
a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and  
an analog television signal.

15 61. The apparatus of claim 59, wherein:

the processor determines a second pseudo-range between the user terminal and the mobile telephone base station based on a known component of the mobile telephone signal;  
and

20 the processor determines a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

62. The apparatus of claim 61, wherein:

25 the receiver receives at the user terminal a global positioning signal from a global positioning satellite;

the processor determines a third pseudo-range between the user terminal and the global positioning satellite based on the global positioning signal; and

30 the processor determines a position of the user terminal based on the first, second and third pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

63. The apparatus of claim 59, wherein:  
the receiver receives at the user terminal a global positioning signal from a global  
positioning satellite;  
5 the processor determines a second pseudo-range between the user terminal and the  
global positioning satellite based on the global positioning signal; and  
the processor determines a position of the user terminal based on the first and second  
pseudo-ranges, the range, a location of the television signal transmitter, a location of the  
mobile telephone base station, and a location of the global positioning satellite.

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64. An apparatus for determining the position of a user terminal, comprising:  
a receiver to receive at the user terminal a broadcast television signal from a  
television signal transmitter;  
a processor to determine a first pseudo-range between the user terminal and the  
15 television signal transmitter based on a known component of the broadcast television signal;  
wherein the receiver receives at the user terminal a mobile telephone signal from a  
mobile telephone base station;  
wherein the processor determines a second pseudo-range between the user terminal  
and the mobile telephone base station based on a known component of the mobile telephone  
20 signal; and  
a transmitter to transmitting the first and second pseudoranges to a location server  
configured to determine a position of the user terminal based on the first and second pseudo-  
ranges, a location of the television signal transmitter, and a location of the mobile telephone  
base station;  
25 wherein the mobile telephone signal is selected from the group consisting of  
a EDGE (Enhanced Data Rates for Global System for Mobile  
Communications (GSM) Evolution) signal;  
a Code-Division Multiple Access 2000 (cdma2000) signal; and  
a Wideband Code-Division Multiple Access (WCDMA) signal.

30

65. The apparatus of claim 64, wherein the known component of the mobile telephone signal is selected from the group consisting of:

- 5 a training sequence;
- an unmodulated PN sequence;
- a preselected spreading code in a beacon channel of the mobile telephone signal; and
- a codeword in a synchronization channel of the mobile telephone signal.

66. The apparatus of claim 64, wherein the broadcast television signal is selected from the group comprising:

- 10 an American Television Standards Committee (ATSC) digital television signal;
- a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal;
- a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and
- an analog television signal.

15

67. The apparatus of claim 64, wherein:  
the receiver receives at the user terminal a global positioning signal from a global positioning satellite;

- 20 the processor determines a third pseudo-range between the user terminal and the global positioning satellite based on the global positioning signal; and
- the transmitter transmits the first, second and third pseudoranges to a location server configured to determine a position of the user terminal based on the first, second and third pseudo-ranges, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

25

68. An apparatus for determining the position of a user terminal, comprising:  
a receiver to receive at the user terminal a broadcast television signal from a television signal transmitter;

- 30 a processor to determine a pseudo-range between the user terminal and the television signal transmitter based on a known component of the broadcast television signal;

wherein the receiver receives at the user terminal a EDGE (Enhanced Data Rates for Global System for Mobile Communications (GSM) Evolution) mobile telephone signal from a mobile telephone base station, the mobile telephone signal comprising a timing advance parameter;

5 wherein the processor determines a range between the user terminal and the mobile telephone base station based on the timing advance parameter; and

a transmitter to transmit the pseudorange and the range to a location server configured to determine a position of the user terminal based on the pseudorange, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

10

69. The apparatus of claim 68, wherein the broadcast television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;  
a European Telecommunications Standards Institute (ETSI) Digital Video  
15 Broadcasting - Terrestrial (DVB-T) signal;  
a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and  
an analog television signal.

70. The apparatus of claim 68, wherein:

20 the processor determines a second pseudo-range between the user terminal and the mobile telephone base station based on a known component of the mobile telephone signal;  
and

25 the transmitter transmits the first and second pseudo-ranges and the range to a location server configured to determine a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

71. The apparatus of claim 70, wherein:

the receiver receives at the user terminal a global positioning signal from a global  
30 positioning satellite;

the processor determines a third pseudo-range between the user terminal and the global positioning satellite based on the global positioning signal; and

the transmitter transmits the first, second and third pseudo-ranges and the range to a location server configured to determine a position of the user terminal based on the first, second and third pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

72. The apparatus of claim 68, wherein:

the receiver receives at the user terminal a global positioning signal from a global positioning satellite;

the processor determines a second pseudo-range between the user terminal and the global positioning satellite based on the global positioning signal; and

the transmitter transmits the first and second pseudo-ranges and the range to a location server configured to determine a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

73. An apparatus for determining the position of a user terminal, comprising:

a receiver to receive a first pseudo-range from the user terminal, the first pseudo-range determined between the user terminal and a television signal transmitter based on a known component of a broadcast television signal transmitted by the television signal transmitter;

wherein the receiver receives a second pseudo-range from the user terminal, the second pseudo-range determined between the user terminal and a mobile telephone base station based on a known component of a mobile telephone signal transmitted by the mobile telephone base station; and

a processor to determine a position of the user terminal based on the first and second pseudo-ranges, a location of the television signal transmitter, and a location of the mobile telephone base station;

wherein the mobile telephone signal is selected from the group consisting of  
5 a EDGE (Enhanced Data Rates for Global System for Mobile  
Communications (GSM) Evolution) signal;  
a Code-Division Multiple Access 2000 (cdma2000) signal; and  
a Wideband Code-Division Multiple Access (WCDMA) signal.

74. The apparatus of claim 73, wherein the known component of the mobile  
telephone signal is selected from the group consisting of:

10 a training sequence;  
an unmodulated PN sequence;  
a preselected spreading code in a beacon channel of the mobile telephone signal; and  
a codeword in a synchronization channel of the mobile telephone signal.

75. The apparatus of claim 73, wherein the broadcast television signal is selected  
15 from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;  
a European Telecommunications Standards Institute (ETSI) Digital Video  
Broadcasting - Terrestrial (DVB-T) signal;  
a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and  
20 an analog television signal.

76. The apparatus of claim 73, wherein:  
the receiver receives a third pseudo-range between the user terminal and a global  
positioning satellite based on a global positioning signal transmitted by the global positioning  
25 satellite; and

the processor determines a position of the user terminal based on the first, second and  
third pseudo-ranges, a location of the television signal transmitter, a location of the mobile  
telephone base station, and a location of the global positioning satellite.

30 77. An apparatus for determining the position of a user terminal, comprising:

a receiver to receive a pseudo-range between the user terminal and a television signal transmitter, the pseudo-range determined based on a known component of a broadcast television signal transmitted by the television signal transmitter;

5       wherein the receiver receives a range between the user terminal and a mobile telephone base station, the range determined based on a timing advance parameter in a EDGE (Enhanced Data Rates for Global System for Mobile Communications (GSM) Evolution) mobile telephone signal transmitted by the mobile telephone base station; and

10      a processor to determine a position of the user terminal based on the pseudorange, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

78.     The apparatus of claim 77, wherein the broadcast television signal is selected from the group comprising:

15      an American Television Standards Committee (ATSC) digital television signal;  
a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal;  
a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and  
an analog television signal.

20      79.     The apparatus of claim 77, wherein:

the receiver receives a second pseudo-range between the user terminal and the mobile telephone base station, the second pseudo-range determined based on a known component of the mobile telephone signal; and

25      the processor determines a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

80.     The apparatus of claim 79, wherein:

the receiver receives a third pseudo-range between the user terminal and the global positioning satellite, the third pseudo-range determined based on a global positioning signal transmitted by the global positioning satellite; and

5 the processor determines a position of the user terminal based on the first, second and third pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

81. The apparatus of claim 77, wherein:

10 the receiver receives a second pseudo-range between the user terminal and a global positioning satellite, the second pseudo-range determined based on a global positioning signal transmitted by the global positioning satellite; and

the processor determines a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

15

82. An apparatus for determining the position of a user terminal, comprising:  
10 receiver means for receiving at the user terminal a broadcast television signal from a television signal transmitter;

20 processor means for determining a first pseudo-range between the user terminal and the television signal transmitter based on a known component of the broadcast television signal;

wherein the receiver means receives at the user terminal a mobile telephone signal from a mobile telephone base station;

25 wherein the processor means determines a second pseudo-range between the user terminal and the mobile telephone base station based on a known component of the mobile telephone signal; and

wherein the processor means determines a position of the user terminal based on the first and second pseudo-ranges, a location of the television signal transmitter, and a location of the mobile telephone base station;

30

wherein the mobile telephone signal is selected from the group consisting of

5 a EDGE (Enhanced Data Rates for Global System for Mobile Communications (GSM) Evolution) signal;

10 a Code-Division Multiple Access 2000 (cdma2000) signal; and a Wideband Code-Division Multiple Access (WCDMA) signal.

15 83. The apparatus of claim 82, wherein the known component of the mobile telephone signal is selected from the group consisting of:

20 a training sequence;

a unmodulated PN sequence;

25 a preselected spreading code in a beacon channel of the mobile telephone signal; and a codeword in a synchronization channel of the mobile telephone signal.

30 84. The apparatus of claim 82, wherein the broadcast television signal is selected from the group comprising:

35 an American Television Standards Committee (ATSC) digital television signal;

40 a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal;

45 a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and an analog television signal.

50 85. The apparatus of claim 82, wherein:

55 the receiver means receives at the user terminal a global positioning signal from a global positioning satellite;

60 the processor means determines a third pseudo-range between the user terminal and the global positioning satellite based on the global positioning signal; and

65 the processor means determines a position of the user terminal based on the first, second and third pseudo-ranges, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

70 86. An apparatus for determining the position of a user terminal, comprising:

receiver means for receiving at the user terminal a broadcast television signal from a television signal transmitter;

processor means for determining a pseudo-range between the user terminal and the television signal transmitter based on a known component of the broadcast television signal;

5           wherein the receiver means receives at the user terminal a EDGE (Enhanced Data Rates for Global System for Mobile Communications (GSM) Evolution) mobile telephone signal from a mobile telephone base station, the mobile telephone signal comprising a timing advance parameter;

10           wherein the processor means determines a range between the user terminal and the mobile telephone base station based on the timing advance parameter; and

              wherein the processor means determines a position of the user terminal based on the pseudo-range, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

15           87.       The apparatus of claim 86, wherein the broadcast television signal is selected from the group comprising:

              an American Television Standards Committee (ATSC) digital television signal;  
              a European Telecommunications Standards Institute (ETSI) Digital Video  
              Broadcasting - Terrestrial (DVB-T) signal;  
20           a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and  
              an analog television signal.

88.       The apparatus of claim 86, wherein:

25           the processor means determines a second pseudo-range between the user terminal and the mobile telephone base station based on a known component of the mobile telephone signal; and

              the processor means determines a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

89. The apparatus of claim 88, wherein:

the receiver means receives at the user terminal a global positioning signal from a global positioning satellite;

5 the processor means determines a third pseudo-range between the user terminal and the global positioning satellite based on the global positioning signal; and

the processor means determines a position of the user terminal based on the first, second and third pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

10

90. The apparatus of claim 86, wherein:

the receiver means receives at the user terminal a global positioning signal from a global positioning satellite;

15 the processor means determines a second pseudo-range between the user terminal and the global positioning satellite based on the global positioning signal; and

the processor means determines a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

20

91. An apparatus for determining the position of a user terminal, comprising:

receiver means for receiving at the user terminal a broadcast television signal from a television signal transmitter;

25 processor means for determining a first pseudo-range between the user terminal and the television signal transmitter based on a known component of the broadcast television signal;

wherein the receiver means receives at the user terminal a mobile telephone signal from a mobile telephone base station;

30 wherein the processor means determines a second pseudo-range between the user terminal and the mobile telephone base station based on a known component of the mobile telephone signal; and

transmitter means for transmitting the first and second pseudoranges to a location server configured to determine a position of the user terminal based on the first and second pseudo-ranges, a location of the television signal transmitter, and a location of the mobile telephone base station;

5       wherein the mobile telephone signal is selected from the group consisting of

- a EDGE (Enhanced Data Rates for Global System for Mobile Communications (GSM) Evolution) signal;
- a Code-Division Multiple Access 2000 (cdma2000) signal; and
- a Wideband Code-Division Multiple Access (WCDMA) signal.

10

92.     The apparatus of claim 91, wherein the known component of the mobile telephone signal is selected from the group consisting of:

- a training sequence;
- an unmodulated PN sequence;
- 15       a preselected spreading code in a beacon channel of the mobile telephone signal; and
- a codeword in a synchronization channel of the mobile telephone signal.

93.     The apparatus of claim 91, wherein the broadcast television signal is selected from the group comprising:

- 20       an American Television Standards Committee (ATSC) digital television signal;
- a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal;
- a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and
- an analog television signal.

25

94.     The apparatus of claim 91, wherein:

- the receiver means receives at the user terminal a global positioning signal from a global positioning satellite;
- the processor means determines a third pseudo-range between the user terminal and
- 30       the global positioning satellite based on the global positioning signal; and

the transmitter means transmits the first, second and third pseudoranges to a location server configured to determine a position of the user terminal based on the first, second and third pseudo-ranges, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

5

95. An apparatus for determining the position of a user terminal, comprising:  
10 receiver means for receiving at the user terminal a broadcast television signal from a television signal transmitter;

15 processor means for determining a pseudo-range between the user terminal and the television signal transmitter based on a known component of the broadcast television signal;  
20 wherein the receiver means receives at the user terminal a EDGE (Enhanced Data Rates for Global System for Mobile Communications (GSM) Evolution) mobile telephone signal from a mobile telephone base station, the mobile telephone signal comprising a timing advance parameter;

25 wherein the processor means determines a range between the user terminal and the mobile telephone base station based on the timing advance parameter; and

30 transmitter means for transmitting the pseudorange and the range to a location server configured to determine a position of the user terminal based on the pseudorange, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

96. The apparatus of claim 95, wherein the broadcast television signal is selected from the group comprising:

25 an American Television Standards Committee (ATSC) digital television signal;  
a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal;  
30 a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and  
an analog television signal.

30 97. The apparatus of claim 95, wherein:

the processor means determines a second pseudo-range between the user terminal and the mobile telephone base station based on a known component of the mobile telephone signal; and

5 the transmitter means transmits the first and second pseudo-ranges and the range to a location server configured to determine a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

98. The apparatus of claim 97, wherein:

10 the receiver means receives at the user terminal a global positioning signal from a global positioning satellite;

the processor means determines a third pseudo-range between the user terminal and the global positioning satellite based on the global positioning signal; and

15 the transmitter means transmits the first, second and third pseudo-ranges and the range to a location server configured to determine a position of the user terminal based on the first, second and third pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

20 99. The apparatus of claim 95, wherein:

the receiver means receives at the user terminal a global positioning signal from a global positioning satellite;

the processor means determines a second pseudo-range between the user terminal and the global positioning satellite based on the global positioning signal; and

25 the transmitter means transmits the first and second pseudo-ranges and the range to a location server configured to determine a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

30 100. An apparatus for determining the position of a user terminal, comprising:

receiver means for receiving a first pseudo-range from the user terminal, the first pseudo-range determined between the user terminal and a television signal transmitter based on a known component of a broadcast television signal transmitted by the television signal transmitter;

5       wherein the receiver means receives a second pseudo-range from the user terminal, the second pseudo-range determined between the user terminal and a mobile telephone base station based on a known component of a mobile telephone signal transmitted by the mobile telephone base station; and

10      processor means for determining a position of the user terminal based on the first and second pseudo-ranges, a location of the television signal transmitter, and a location of the mobile telephone base station;

      wherein the mobile telephone signal is selected from the group consisting of

      a EDGE (Enhanced Data Rates for Global System for Mobile

      Communications (GSM) Evolution) signal;

15      a Code-Division Multiple Access 2000 (cdma2000) signal; and

      a Wideband Code-Division Multiple Access (WCDMA) signal.

101.     The apparatus of claim 100, wherein the known component of the mobile telephone signal is selected from the group consisting of:

20      a training sequence;

      an unmodulated PN sequence;

      a preselected spreading code in a beacon channel of the mobile telephone signal; and

      a codeword in a synchronization channel of the mobile telephone signal.

25     102.    The apparatus of claim 100, wherein the broadcast television signal is selected from the group comprising:

      an American Television Standards Committee (ATSC) digital television signal;

      a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal;

30      a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and

an analog television signal.

103. The apparatus of claim 100, wherein:

the receiver means receives a third pseudo-range between the user terminal and a  
5 global positioning satellite based on a global positioning signal transmitted by the global  
positioning satellite; and

the processor means determines a position of the user terminal based on the first,  
second and third pseudo-ranges, a location of the television signal transmitter, a location of  
the mobile telephone base station, and a location of the global positioning satellite.

10

104. An apparatus for determining the position of a user terminal, comprising:  
receiver means for receiving a pseudo-range between the user terminal and a  
television signal transmitter, the pseudo-range determined based on a known component of a  
broadcast television signal transmitted by the television signal transmitter;

15 wherein the receiver means receives a range between the user terminal and a mobile  
telephone base station, the range determined based on a timing advance parameter in a  
EDGE (Enhanced Data Rates for Global System for Mobile Communications (GSM)  
Evolution) mobile telephone signal transmitted by the mobile telephone base station; and

20 processor means for determining a position of the user terminal based on the  
pseudorange, the range, a location of the television signal transmitter, and a location of the  
mobile telephone base station.

105. The apparatus of claim 104, wherein the broadcast television signal is selected  
from the group comprising:

25 an American Television Standards Committee (ATSC) digital television signal;  
a European Telecommunications Standards Institute (ETSI) Digital Video  
Broadcasting - Terrestrial (DVB-T) signal;  
a Japanese Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal; and  
an analog television signal.

30

106. The apparatus of claim 104, wherein:

the receiver means receives a second pseudo-range between the user terminal and the mobile telephone base station, the second pseudo-range determined based on a known component of the mobile telephone signal; and

5 the processor means determines a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, and a location of the mobile telephone base station.

107. The apparatus of claim 106, wherein:

10 the receiver means receives a third pseudo-range between the user terminal and the global positioning satellite, the third pseudo-range determined based on a global positioning signal transmitted by the global positioning satellite; and

15 the processor means determines a position of the user terminal based on the first, second and third pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.

108. The apparatus of claim 104, wherein:

20 the receiver means receives a second pseudo-range between the user terminal and a global positioning satellite, the second pseudo-range determined based on a global positioning signal transmitted by the global positioning satellite; and

the processor means determines a position of the user terminal based on the first and second pseudo-ranges, the range, a location of the television signal transmitter, a location of the mobile telephone base station, and a location of the global positioning satellite.